

**Remarks**

The Office Action mailed August 10, 2005 has been carefully reviewed and the following remarks have been made in consequence thereof.

Claims 1-18 are now pending in this application. Claims 1-18 are rejected. Claims 1, 2, and 7-18 have been amended. No new matter has been added.

In accordance with 37 C.F.R. 1.136(a), a two-month extension of time is submitted herewith to extend the due date of the response to the Office Action dated August 10, 2005 for the above-identified patent application from November 10, 2005 through and including January 10, 2006. In accordance with 37 C.F.R. 1.17(a)(2), authorization to charge a deposit account in the amount of \$450.00 to cover this extension of time request also is submitted herewith.

The rejection of Claims 1-3, 5-11, 13-15, and 17-18 under 35 U.S.C. § 102(e) and/or 35 U.S.C. § 102(b) as being anticipated by Clark (U.S. Patent No. 5,980,458) is respectfully traversed.

Clark describes an ultrasonic imaging system. In a "rapid burst" mode, the system transmits and receives a sequence or set of lines along a single direction (column 2, lines 8-11). The set of lines along a single direction is referred to as a "packet". The transmission and reception is repeated across a sector so that a set of a plurality of packets of the sector include a frame.

Claim 1 recites an ultrasonic pulse transmission method comprising "when a number of packets  $P$  ( $\geq 2$ ) is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, interleaving at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which said first acoustic line signal belongs between the ultrasonic pulse transmissions in said one direction."

Clark does not describe or suggest an ultrasonic pulse transmission method as recited in Claim 1. Specifically, Clark does not describe or suggest when a number of packets  $P$  ( $\geq 2$ ) is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, interleaving at least one ultrasonic

pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction. Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach defining a number of packets  $P (\geq 2)$  for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. Accordingly, Clark does not describe or suggest when a number of packets  $P (\geq 2)$  is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. For the reasons set forth above, Claim 1 is submitted to be patentable over Clark.

Claims 2, 3, 5, and 6 depend from independent Claim 1. When the recitations of Claims 2, 3, 5, and 6 are considered in combination with the recitations of Claim 1, Applicant submits that Claims 2, 3, 5, and 6 likewise are patentable over Clark.

Claim 7 recites an ultrasonic diagnostic apparatus comprising "an ultrasonic probe; a number-of-frames defining device for defining a number of frames  $f$ ; a number-of-packets defining device for defining a number of packets  $P (\geq 2)$ ; a transmitting/receiving device for driving said ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal; and a transmission direction control device for controlling the transmission direction to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which said first acoustic line signal belongs between the ultrasonic pulse transmissions in said one direction."

Clark does not describe or suggest an ultrasonic diagnostic apparatus as recited in Claim 7. Specifically, Clark does not describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, and a transmission direction control device for controlling the transmission direction to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one

direction, where a number of packets  $P (\geq 2)$ . Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Accordingly, Clark does not describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . For the reasons set forth above, Claim 7 is submitted to be patentable over Clark.

Claims 8, 11, and 13-14 depend from independent Claim 7. When the recitations of Claims 8, 11, and 13-14 are considered in combination with the recitations of Claim 7, Applicant submits that Claims 8, 11, and 13-14 likewise are patentable over Clark.

Claim 9 recites an ultrasonic diagnostic apparatus comprising "an ultrasonic probe; a number-of-frames defining device for defining a number of frames  $f$ ; a number-of-packets defining device for defining a number of packets  $P (\geq 2)$ ; a transmitting/receiving device for driving said ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal; a transmission direction control device for controlling the transmission direction in an intra-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to the frame to which said first acoustic line signal belongs between the ultrasonic pulse transmissions in said one direction, or in an inter-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a third acoustic line signal that belongs to a frame different from that to which said first acoustic line signal belongs between the ultrasonic pulse transmissions in said one direction; and an interleave mode selecting device for an operator to select between said intra-frame mode and inter-frame mode."

Clark does not describe or suggest an ultrasonic diagnostic apparatus as recited in Claim 9. Specifically, Clark does not describe or suggest a

transmitting/receiving device for driving the ultrasonic probe to conduct P ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, a transmission direction control device for controlling the transmission direction in an intra-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to the frame to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, or in an inter-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a third acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, and an interleave mode selecting device for an operator to select between the intra-frame mode and inter-frame mode. Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Accordingly, Clark does not describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct P ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . For the reasons set forth above, Claim 9 is submitted to be patentable over Clark.

Claims 10, 15, 17, and 18 depend from independent Claim 9. When the recitations of Claims 10, 15, 17, and 18 are considered in combination with the recitations of Claim 9, Applicant submits that Claims 10, 15, 17, and 18 likewise are patentable over Clark.

For at least the reasons set forth above, Applicant respectfully requests that the rejection(s) of Claims 1-3, 5-11, 13-15, and 17-18 under 35 U.S.C. § 102(e) and/or 35 U.S.C. § 102(b) be withdrawn.

The rejection of Claims 1-3, 5-11, 13-15, and 17-18 under 35 U.S.C. § 103(a) as being unpatentable over Clark in view of Bjaerum et al. (U.S. Patent No. 6,537,217) is respectfully traversed.

Clark is described above. Bjaerum et al. describe a system for transmitting a plurality of Doppler pulses. A time between two of the Doppler pulses within a packet is called a Doppler pulse repetition time (column 1, lines 64-67).

Claim 1 recites an ultrasonic pulse transmission method comprising “when a number of packets  $P (\geq 2)$  is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, interleaving at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which said first acoustic line signal belongs between the ultrasonic pulse transmissions in said one direction.”

Neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest an ultrasonic pulse transmission method as recited in Claim 1. Specifically, neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest when a number of packets  $P (\geq 2)$  is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, interleaving at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction. Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach defining a number of packets  $P (\geq 2)$  for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. Bjaerum et al. describe including a plurality of Doppler pulses within a packet. A description of a plurality of Doppler pulses within a packet does not teach defining a number of packets  $P (\geq 2)$  for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. Accordingly, neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest when a number of packets  $P (\geq 2)$  is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. For the reasons set forth above, Claim 1 is submitted to be patentable over Clark in view of Bjaerum et al.

Claims 2, 3, 5, and 6 depend from independent Claim 1. When the recitations of Claims 2, 3, 5, and 6 are considered in combination with the recitations of Claim 1,

Applicant submits that Claims 2, 3, 5, and 6 likewise are patentable over Clark in view of Bjaerum et al.

Claim 7 recites an ultrasonic diagnostic apparatus comprising “an ultrasonic probe; a number-of-frames defining device for defining a number of frames  $f$ ; a number-of-packets defining device for defining a number of packets  $P$  ( $\geq 2$ ); a transmitting/receiving device for driving said ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal; and a transmission direction control device for controlling the transmission direction to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which said first acoustic line signal belongs between the ultrasonic pulse transmissions in said one direction.”

Neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest an ultrasonic diagnostic apparatus as recited in Claim 7. Specifically, neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, and a transmission direction control device for controlling the transmission direction to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, where a number of packets  $P$  ( $\geq 2$ ). Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P$  ( $\geq 2$ ). Bjaerum et al. describe including a plurality of Doppler pulses within a packet. A description of a plurality of Doppler pulses within a packet does not teach conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P$  ( $\geq 2$ ). Accordingly, neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$

ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . For the reasons set forth above, Claim 7 is submitted to be patentable over Clark in view of Bjaerum et al.

Claims 8, 11, and 13-14 depend from independent Claim 7. When the recitations of Claims 8, 11, and 13-14 are considered in combination with the recitations of Claim 7, Applicant submits that Claims 8, 11, and 13-14 likewise are patentable over Clark in view of Bjaerum et al.

Claim 9 recites an ultrasonic diagnostic apparatus comprising “an ultrasonic probe; a number-of-frames defining device for defining a number of frames  $f$ ; a number-of-packets defining device for defining a number of packets  $P (\geq 2)$ ; a transmitting/receiving device for driving said ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal; a transmission direction control device for controlling the transmission direction in an intra-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to the frame to which said first acoustic line signal belongs between the ultrasonic pulse transmissions in said one direction, or in an inter-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a third acoustic line signal that belongs to a frame different from that to which said first acoustic line signal belongs between the ultrasonic pulse transmissions in said one direction; and an interleave mode selecting device for an operator to select between said intra-frame mode and inter-frame mode.”

Neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest an ultrasonic diagnostic apparatus as recited in Claim 9. Specifically, neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, a transmission direction control device for controlling the transmission direction in an intra-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to the frame to which the first acoustic line

signal belongs between the ultrasonic pulse transmissions in the one direction, or in an inter-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a third acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, and an interleave mode selecting device for an operator to select between the intra-frame mode and inter-frame mode. Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Bjaerum et al. describe including a plurality of Doppler pulses within a packet. A description of a plurality of Doppler pulses within a packet does not teach conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Accordingly, neither Clark nor Bjaerum et al., considered alone or in combination, describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct P ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . For the reasons set forth above, Claim 9 is submitted to be patentable over Clark in view of Bjaerum et al.

Claims 10, 15, 17, and 18 depend from independent Claim 9. When the recitations of Claims 10, 15, 17, and 18 are considered in combination with the recitations of Claim 9, Applicant submits that Claims 10, 15, 17, and 18 likewise are patentable over Clark in view of Bjaerum et al.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 1-3, 5-11, 13-15, and 17-18 be withdrawn.

The rejection of Claims 4, 12, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Clark is respectfully traversed.

Clark is described above.



Claim 4 depends from independent Claim 1 which is recited above. Clark does not describe or suggest an ultrasonic pulse transmission method as recited in Claim 1. Specifically, Clark does not describe or suggest when a number of packets  $P$  ( $\geq 2$ ) is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, interleaving at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction. Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach defining a number of packets  $P$  ( $\geq 2$ ) for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. Accordingly, Clark does not describe or suggest when a number of packets  $P$  ( $\geq 2$ ) is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. For the reasons set forth above, Claim 1 is submitted to be patentable over Clark.

When the recitations of Claim 4 are considered in combination with the recitations of Claim 1, Applicant submits that Claim 4 likewise is patentable over Clark.

Claim 12 depends from independent Claim 7 which is recited above. Clark does not describe or suggest an ultrasonic diagnostic apparatus as recited in Claim 7. Specifically, Clark does not describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, and a transmission direction control device for controlling the transmission direction to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, where a number of packets  $P$  ( $\geq 2$ ). Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach conducting  $P$  ultrasonic pulse transmissions in

one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Accordingly, Clark does not describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . For the reasons set forth above, Claim 7 is submitted to be patentable over Clark.

When the recitations of Claim 12 are considered in combination with the recitations of Claim 7, Applicant submits that Claim 12 likewise is patentable over Clark.

Claim 16 depends from independent Claim 9 which is recited above. Clark does not describe or suggest an ultrasonic diagnostic apparatus as recited in Claim 9. Specifically, Clark does not describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, a transmission direction control device for controlling the transmission direction in an intra-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to the frame to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, or in an inter-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a third acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, and an interleave mode selecting device for an operator to select between the intra-frame mode and inter-frame mode. Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Accordingly, Clark does not describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct  $P$  ultrasonic pulse transmissions in one direction and receive echoes to acquire a first

acoustic line signal, where a number of packets  $P (\geq 2)$ . For the reasons set forth above, Claim 9 is submitted to be patentable over Clark.

When the recitations of Claim 16 are considered in combination with the recitations of Claim 9, Applicant submits that Claim 16 likewise is patentable over Clark.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 4, 12, and 16 be withdrawn.

In addition to the arguments set forth above, Applicant respectfully submits that the Section 103 rejection of Claims 4, 12, and 16 as being unpatentable over Clark is not a proper rejection. As is well established, the mere assertion that it would have been obvious to one of ordinary skill in the art to have modified Clark to obtain the claimed recitations of the present invention does not support a prima facie obvious rejection. Rather, each allegation of what would have been an obvious matter of design choice must always be supported by citation to some reference work recognized as standard in the pertinent art and the Applicant given the opportunity to challenge the correctness of the assertion or the notoriety or repute of the cited reference. Applicant has not been provided with the citation to any reference supporting the combination made in the rejection. The rejection, therefore, fails to provide the Applicant with a fair opportunity to respond to the rejection, and fails to provide the Applicant with the opportunity to challenge the correctness of the rejection. Of course, such combinations are impermissible, and for this reason alone, Applicant requests that the Section 103 rejection of Claims 4, 12, and 16 be withdrawn.

The rejection of Claims 4, 12, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Clark in view of Bjaerum et al., and further in view of Okunuki et al. (U.S. Patent No. 5,460,179) is respectfully traversed.

Clark and Bjaerum et al. are described above. Okunuki et al. describe an array transducer. A scanning plane S1, which is an area from which two-dimensional echo data can be obtained, is produced by scanning the array transducer electronically (column 2, lines 6-8). Further, under a condition, when the array transducer is moved

mechanically for mechanical scanning in the right and left directions, the electronic scanning plane S1 is also shifted (column 2, lines 9-12).

Claim 4 depends from independent Claim 1 which is recited above. None of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe or suggest an ultrasonic pulse transmission method as recited in Claim 1. Specifically, none of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe or suggest when a number of packets  $P (\geq 2)$  is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, interleaving at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction. Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach defining a number of packets  $P (\geq 2)$  for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. Bjaerum et al. describe including a plurality of Doppler pulses within a packet. A description of a plurality of Doppler pulses within a packet does not teach defining a number of packets  $P (\geq 2)$  for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. Okunuki et al. describe shifting an electronic scanning plane S1 when an array transducer is moved mechanically for mechanical scanning in the right and left directions. Accordingly, none of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe or suggest when a number of packets  $P (\geq 2)$  is defined for conducting  $P$  ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal. For the reasons set forth above, Claim 1 is submitted to be patentable over Clark in view of Bjaerum et al. and further in view of Okunuki et al.

When the recitations of Claim 4 are considered in combination with the recitations of Claim 1, Applicant submits that Claim 4 likewise is patentable over Clark in view of Bjaerum et al. and further in view of Okunuki et al.

Claim 12 depends from independent Claim 7 which is recited above. None of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe

or suggest an ultrasonic diagnostic apparatus as recited in Claim 7. Specifically, none of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct P ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, and a transmission direction control device for controlling the transmission direction to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, where a number of packets  $P (\geq 2)$ . Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Bjaerum et al. describe including a plurality of Doppler pulses within a packet. A description of a plurality of Doppler pulses within a packet does not teach conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Okunuki et al. describe shifting an electronic scanning plane S1 when an array transducer is moved mechanically for mechanical scanning in the right and left directions. Accordingly, none of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct P ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . For the reasons set forth above, Claim 7 is submitted to be patentable over Clark in view of Bjaerum et al. and further in view of Okunuki et al.

When the recitations of Claim 12 are considered in combination with the recitations of Claim 7, Applicant submits that Claim 12 likewise is patentable over Clark in view of Bjaerum et al. and further in view of Okunuki et al.

Claim 16 depends from independent Claim 9 which is recited above. None of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe or suggest an ultrasonic diagnostic apparatus as recited in Claim 9. Specifically, none of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination,

describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct P ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, a transmission direction control device for controlling the transmission direction in an intra-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a second acoustic line signal that belongs to the frame to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, or in an inter-frame mode in which the transmission direction is controlled to interleave at least one ultrasonic pulse transmission for acquiring a third acoustic line signal that belongs to a frame different from that to which the first acoustic line signal belongs between the ultrasonic pulse transmissions in the one direction, and an interleave mode selecting device for an operator to select between the intra-frame mode and inter-frame mode. Rather, Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet does not teach conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Bjaerum et al. describe including a plurality of Doppler pulses within a packet. A description of a plurality of Doppler pulses within a packet does not teach conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Okunuki et al. describe shifting an electronic scanning plane S1 when an array transducer is moved mechanically for mechanical scanning in the right and left directions. Accordingly, none of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe or suggest a transmitting/receiving device for driving the ultrasonic probe to conduct P ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . For the reasons set forth above, Claim 9 is submitted to be patentable over Clark in view of Bjaerum et al. and further in view of Okunuki et al.

When the recitations of Claim 16 are considered in combination with the recitations of Claim 9, Applicant submits that Claim 16 likewise is patentable over Clark in view of Bjaerum et al. and further in view of Okunuki et al.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejection of Claims 4, 12, and 16 be withdrawn.

Moreover, Applicant respectfully submits that the Section 103 rejections of Claims 1-18 are not proper rejections. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Clark, Bjaerum et al., or Okunuki et al., considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicant respectfully submits that it would not be obvious to one skilled in the art to combine Clark with Bjaerum et al. or Okunuki et al. because there is no motivation to combine the references suggested in the cited art itself.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicant's disclosure, in the prior art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicant's disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejections are based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Clark teaches transmitting and receiving a set of lines along a single direction. Clark also teaches that the set of lines along the single

direction is a "packet". Bjaerum et al. teach including a plurality of Doppler pulses within a packet. Okunuki et al. teach shifting an electronic scanning plane S1 when an array transducer is moved mechanically for mechanical scanning in the right and left directions. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejections appear to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicant requests that the Section 103 rejections of Claims 1-18 be withdrawn.

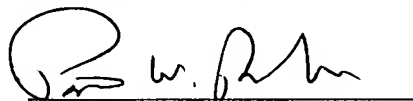
Furthermore, if art "teaches away" from a claimed invention, such a teaching supports the nonobviousness of the invention. U.S. v. Adams, 148 USPQ 479 (1966); Gillette Co. v. S.C. Johnson & Son, Inc., 16 USPQ2d 1923, 1927 (Fed. Cir. 1990). In light of this standard, it is respectfully submitted that the cited art, as a whole, is not suggestive of the presently claimed invention. More specifically, Applicant respectfully submits that Clark and Bjaerum et al. teach away from the recitations of Claims 1, 7, and 9. Clark describes transmitting and receiving a set of lines along a single direction. Clark also describes that the set of lines along the single direction is a "packet". A description of referring to the set of lines along the single direction as a packet teaches away from conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Bjaerum et al. describe including a plurality of Doppler pulses within a packet. A description of a plurality of Doppler pulses within a packet also teaches away from conducting P ultrasonic pulse transmissions in one direction to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Applicant respectfully submits it would not be obvious to conduct P ultrasonic pulse transmissions in one direction and receive echoes to acquire a first acoustic line signal, where a number of packets  $P (\geq 2)$ . Accordingly, Applicant submits that Clark and Bjaerum et al. teach away from Claims 1, 7, and 9.

For at least the reasons set forth above, Applicant respectfully requests that the Section 103 rejections of Claims 1, 7, and 9 be withdrawn.



In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'P. W. Rasche', is written over a horizontal line.

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